The Habits of the Cuckoo.

IN connection with the interesting article in NATURE of Dec. 26, 1895, on the habits of the common cuckoo, it may be of interest to some of your readers to record the following observations, which afford further evidence in support of the contention that the cuckoo occasionally lays its egg before carrying it to the nest in which it is to be deposited.

A few seasons ago, a pair of robins built in the ivy covering the walls of our house. It was cunningly concealed, about five feet from the ground, in a hollow formed between the wall and the interlacing stems of the ivy. The nest was successfully finished, and four or five eggs were laid. One day, in the early hours of the afternoon, the loud notes of a female cuckoo attracted our attention. Almost immediately afterwards we saw the bird on one of the branches of a large yew-tree growing close to the corner of the house where the nest, was placed, and one of our party exclaimed, "Oh! it is holding something in its beak." It seemed in no way disturbed by the close proximity of the house and its inhabitants, and, after a moment's pause, flew down and disappeared behind the angle of the wall. It then quickly reappeared and flew away, making a considerable noise. We immediately went to the nest, and found the cuckoo's egg together with the robin's. The entrance to the robin's nest, and the entire hollow where it lay, was far too small to admit so large a bird as the cuckoo; the short time, also, that the bird was there, presumably points to the fact that it carried its egg thither and simply placed it in the nest.

Some years before, much the same thing occurred in the same garden. In this instance the robin's nest was in a hole in a bank, which was also too small to easily admit the cuckoo. The parent robins were seen furiously attacking the larger bird, who was forced to beat a retreat. But it had already deposited its egg in the robin's nest, where we found it immediately afterwards.

London, December 29, 1895. ANNIE LEY.

A Luminous Centipede.

WAS not the insect seen by Miss Rose Haig Thomas (see NATURE, p. 131) a specimen of the Myriapod *Scolopendra electrica*, or *Geophilus electricus*, a well-known luminous insect whose light is but rarely seen owing to the insect living underground and in manure heaps? It is, however, the only luminous British species. I have but once seen one crawling abroad at night, but I know the insect well. It may be readily captured in the daytime. The light is bright and the colour is the same as that of the glow-worm. According to my observation both sexes are luminous, and the light is not peculiar to the summer season, as is that of the British glow-worm, hence the meeting of the sexes can scarcely be the object of the luminous prevision.

Worcester, December 20, 1895. J. LLOYD BOZWARD.

IT is impossible to give an unqualified reply in the negative to Mr. Lloyd Bozward's question; but for reasons stated in the note appended to Miss Rose Haig Thomas's communication, I see no grounds for doubting that the specimen she observed was an example of *Linotænia crassipes*, and not of *Geophilus electricus* (= *Scolopendra electrica*, Linn.). So far as my experience goes, the latter is very scarce in the south of England. It must be borne in mind, however, that there is no safety in the assumption that every luminous centipede found in this country is certainly referable either to one or the other of these two species. As a matter of fact, the family *Geophilidæ* is represented in England by at least a dozen species, belonging to five genera, and it is possible that all of them possess the property of phosphorescence. Perhaps it is not surprising that persons unacquainted with these facts jump to the conclusion that every luminous centipede they see must be co-specific with the one to which Linnæus gave the name *electricus*. This is so far from being the case, that not one of the many specimens that have been brought of late years to the British Museum, on account of its luminosity, has proved to be an example of this species. No doubt, however, there is much that might be learnt on this subject by the careful preservation of specimens, with particulars as to date, locality, &c., and I need hardly add that I shall be very pleased to identify any examples that are sent or brought to me at the British Museum for that purpose.

British Museum, Cromwell Road, S.W. R. I. POCOCK.

A Lecture Experiment on the Nodes of a Bell.

THE following modification of Chladni's method makes an interesting lecture experiment, and shows the nodal lines of a bell far more sharply and easily than any process already described of which I am aware. For the bell, use a cylindrical glass crystallising pan (say nine or ten inches diameter and four to six inches deep, but almost any size will do), and stand it, rim upwards, on three india-rubber corks. Some light-coloured powder, such as flowers of sulphur, is mixed with soapy water and smeared over the concave surface. The mixture should be quite watery, and can be applied by pouring a little into the bell, which is then tilted as much as possible and rotated round its axis. With one hand inside the bell, press it down firmly on the corks, and excite the rim with a bow. It is best to make double contact with the bow at two opposite points on the rim, and a succession of rapid strokes will produce strong vibrations, the powder meanwhile shooting upwards in arch-like curves, till it collects in four or six distinct vertical lines, easily visible at a distance if held against something black. Using a smaller vessel, smeared only half-way round, no doubt the whole process could be optically projected. G. OSBORN.

The Leys School, Cambridge.

The Critical Temperature of Hydrogen.

IF my allusion to the absence of "fresh experiments" in Dr. Natanson's work is not sufficient acknowledgment of its purely theoretical nature, a reference to my original abstract in the Physical Society's *Proceedings* will, I feel sure, correct any false impression that has arisen in the author's mind on that point. My note was in no way intended as a criticism or expression of opinion. But the Cracow *Bulletin* paper was certainly calculated to give any reader the idea that Dr. Natanson was the only worker besides Olszewski who had attempted to calculate the critical temperature of hydrogen, and, to prevent misunderstanding, a reference to Wroblewski's previous work seemed desirable. As Dr. Natanson still appears to pass over the long and laborious experiments on which the latter investigation was based, and to be unaware that the whole object was to get the critical constants, &c., *from the application of Van der Waals' theory* (which had previously given chemists an accurate knowledge of such data in the case of oxygen, nitrogen, and marsh-gas *before the gases had been actually liquefied*), I must refer *him* to Wroblewski's memoir. Further, it might interest him to consult a paper by Prof. Dewar in the *Philosophical Magazine* for September, 1884, which discusses the critical constants of hydrogen based on the experimental facts known at that time.

G. H. BRYAN.

THE SPERM WHALE AND ITS FOOD.

THE services which H.S.H. the Prince of Monaco has rendered to the science of oceanography, during the last ten or twelve years, are familiar to every one interested in that department of research. First in the small schooner *Hirondelle*, with no power but the strong arms of his Breton crew, and later, in the large and perfectly equipped auxiliary steam yacht *Princesse Alice*, there is no branch of the science which has not been enriched by his enlightened enterprise and his unwearied perseverance. It may be interesting to the readers of NATURE to know something of what was achieved in the summer cruise of 1895 in the waters of the North Atlantic, chiefly in the vicinity of the Azores. The dredging and other deep-sea operations conducted on board the yacht herself were very successful, and produced an abundant harvest. The most interesting result of the cruise, however, was due to the lucky chance of a cachalot or sperm whale being pursued by the whale-fishers of Terceira, and killed almost under the bows of the *Princesse Alice*, and to the prompt measures taken by the Prince to utilise this rare opportunity, the importance of which for science he immediately and intuitively perceived. The preliminary reports of the investigation of the material thus collected by the Prince, in collaboration with the Portuguese whalers, go to show that an almost entirely new and unsuspected animal kingdom has been opened to the zoologist.

A general account of the nature of the results has just been given, under the title "Prise d'un Cachalot," to the Société des Naturalistes, at its meeting in the amphitheatre of the Museum of the Jardin des Plantes, on December 24; and two communications were made, on December 30, to the Academy of Sciences by the Prince, of which one was from Prof. Joubain, of Rennes, dealing especially with the specimens of gigantic cephalopods obtained. It will be convenient to give the proceedings of the yacht, during and after the capture of the cachalot, in the form of an abstract of the Prince's own communications, and to deal with the specific details of the animals collected, in the form of an abstract of Prof. Joubain's paper.

Proceedings of the Yacht.

On July 18 of last year, about nine o'clock in the morning, I observed, while engaged in operations in the deep water to the south of the island of Terceira, two boats leave the coast under sail, and about half an hour later two other boats proceeded in the same direction from another point. It was evident that they were not bound on an ordinary fishing expedition, and I quickly perceived that they were in pursuit of a school of sperm whales or cachalots; and I finished with the greatest speed the work in hand, in order to be able to take full advantage of the rare occasion of being able to assist at the capture of one of these interesting animals, should such be the result of the exertions of the whalers. About eleven o'clock I observed a whale spouting at a distance of about two miles, and I perceived that one of the whalers was approaching it cautiously. I was careful to remain at the same distance, in order not to run the risk of interfering with the whaler, and I closely followed all the manœuvres. The officer or coxswain of the boat stood erect in the stern, steering the boat with an oar. The harponeer stood in the bows, and I distinctly saw him strike the whale. I then approached the group at full speed, while the other whalers dispersed in pursuit of other members of the school. When I had arrived within one or two hundred metres, the cachalot had already towed the whaler attached to it by the harpoon, and the whole length of this line, to a considerable distance, and the harponeer had just succeeded in giving the animal the thrust of the lance, which terminates the struggle if skilfully delivered. The spray thrown out by the animal had become pink, and soon became quite red, while a pool of blood extended itself more and more on the surface of the water around. The *Princesse Alice* was lying at about one hundred metres from the animal when it turned slowly round, lashed out with its tail, and then came straight for the yacht at a speed of ten or twelve knots. As there are many records of whaling ships having been sunk by the cachalot under similar circumstances, it will not be wondered at if I confess to having experienced some anxiety during the approach of the whale, and when powerless to avoid it. Just, however, at the moment when I expected the shock, the whale sounded, passed under the keel without touching it, and reappeared on the other side in the agony of death. The rescue of the yacht from certain damage, if not from destruction, would have been impossible had the life of the whale been spared for a little longer. The cachalot was now floating alongside, with its head at a distance of about fifteen metres from the rudder, when its jaws opened and allowed several objects to escape, which I quickly recognised as cephalopods; but, notwithstanding the speed with which a boat was got away, in order to secure these animals, of the inestimable value of which I had already a presentiment, I perceived that they had begun to sink. On the spur of the moment, I started the engines very slow astern, and the coveted remains circulated slowly in the vortices produced by the propeller until they were secured by the boat.

The vessel now floated in a sea of blood of some acres in extent, and the whalers fixed one of our hawsers to the head of the dead animal; for they had gladly accepted my offer to tow it to El Negrito, where they have their installation for harvesting the oil from the whales that they are lucky enough to catch. The towing operation was not an easy one. The tail acting as a rudder, caused the animal to swerve so violently from one side to another, that it was necessary to desist from the attempt to tow it head foremost, and to shift the tow-rope to the tail, after which the operation was completed without difficulty. The creek, which was the final destination of the whale, was not a suitable place for the yacht to remain; so, after landing the zoologists, MM. Richard and Lallier, and the artist, M. Borel, she left for the anchorage of Angra, while these gentlemen remained to assist at the breaking-up of the whale, with all the materials necessary for preserving the interesting matter which it promised to furnish.

For four days, under a burning sun, the whalers worked at removing the blubber and transferring it to the neighbouring house, where it was boiled down. At the same time they endeavoured to assist me in every way in securing the portions of the animal which interested me, more especially the brain. But the work was so difficult that it was only at the end of the fourth day that the skull was penetrated, and then the brain was found in a too advanced state of decomposition to be of use for preservation. It was impossible to approach the brain sooner, except by sacrificing the spermaceti, of which the volume was more than a cubic metre, and the commercial value very great. For half a day several men stood up to their middles in the cavity of the head which contains the spermaceti, and ladled it out. It must be remembered that the whale, which was stranded at high water, could only be worked at after the tide had ebbed considerably.

A large number of parasites were collected from the stomach, the digestive organs, the blubber, and the skin of the animal. M. Richard discovered on the lips of the whale certain round impressions, which he identified as the marks of the suckers of the great cephalopods. One can imagine the struggles of the giants which take place deep under the surface of the ocean. Notwithstanding his activity the cephalopod is seized by the cachalot, who, by means of the formidable teeth of the lower jaw, and the corresponding recesses in the upper jaw, holds the body of the animal without hope of escape. The cephalopod, in its defence, envelopes the face and head of the whale with the crown of its tentacles, the suckers of which leave deep impressions on its lips, and other parts where they have fastened. Meantime the cachalot makes efforts to swallow the portion of the cephalopod of which it has really taken possession, with the effect that the part of comparatively small calibre connecting the body with the head gives way; the body is swallowed, and the head dies and either drops off, or is eaten by the whale.

Zoological Details from Professor Joubain's Paper.

The sperm whale or cachalot (*Physeter macrocephalus*, Lacepède), caught on July 18, 1895, measured 13·7 metres in length. While in the act of death, it ejected several large cephalopods which it had only just swallowed, as was evident from their perfect state of preservation. Amongst them were three large specimens, each over one metre in length, of a species, probably new, of the little-known but interesting genus *Histioteuthis*. The bodies of two other immense cephalopods were collected at the same time. When the stomach of the cachalot was opened, it was found filled with a quantity, estimated at over one hundred kilogrammes, of the partially digested débris of these cephalopods, all of them of enormous size. Amongst this débris may be noticed the crown and tentacles of a cephalopod, the body of which could not be found, belonging probably to the genus *Cucioteuthis*, hitherto known only by a few fragments. The muscular arms, which, though much shrunk and contracted by the preserving liquid, are as thick as those of a man, were covered with great suckers, each armed with a sharp claw, as powerful as those of the larger carnivora. More than one hundred of these suckers remain adhering to the arms.

The bodies of the two great cephalopods constitute one of the most interesting novelties of the scientific cruise of H.S.H. the Prince of Monaco. Their structure and their appearance are so different from all that is known amongst these animals, that it is impossible to place them in any species, genus, or family of this order. I propose for them the name of *Lepidoteuthis Grimaldii*, hoping that the discovery of complete specimens may permit of their affinities being more perfectly defined. One of these animals, half digested, is useless for study; the other, though headless, is much better preserved. It is a female, of which the body or visceral sac, after prolonged immersion in formol and alcohol, still measures 90 centimetres in length, from which it may be concluded that the length of the complete animal would exceed two metres. The surface of the sac is covered with large, solid, rhomboidal scales, arranged spirally like those of a pine cone. The fin (*nageoire*) is very powerful, and forms one half of the length of the body. It is not furnished with scales.

The stomach of the cachalot contained, besides, another cephalopod of large size, provided with a large fin, the skin of which enclosed certain photogenic organs. The head is wanting, so that it is impossible to affirm with certainty that it belongs to a new species, which is made very probable by the form of the body. Finally, the stomach of the cachalot contained a large number of beaks and rays or plumes, the difficultly digestible residue of former repasts.

The cachalot which was killed by the whalers of Terceira, almost under the keel of the *Princesse Alice*, seems as if it had been guided, in the pursuit of its food, by a desire to devour nothing but animals which, up to the present, are completely unknown, and in addition are of the highest importance for the morphology of the cephalopods. These cephalopods are all powerful swimmers, and very muscular. They appear to belong to the fauna of the deep intermediate waters, which is almost completely unknown, at least as regards the larger animals. They never come to the surface, nor do they lie on the bottom of the sea. Their great agility enables them to avoid every attempt to take them by nets; and it would appear that, for the present, the only means of capturing these interesting and gigantic animals is to commission a bigger giant to undertake the task, and to kill him in his turn when he has performed the service.

Accordingly, it is his Highness's intention for next season, either to add to the already very complete fittings of the *Princesse Alice* those of a sperm whaler, or to attach to her a special whaling tender. It need hardly be added, that the further working up of the unique material already collected is being pushed forward with the greatest energy, and the results will be awaited with interest and impatience. J. Y. Buchanan.

NOTES.

Men of science need no reminder that, however they may be separated by political or racial differences, they are united in the promotion of natural knowledge. Scientific academies and societies in every part of the world delight to admit foreign investigators into fellowship, and to show publicly, by various marks of appreciation, their regard for contributions to known facts of nature, and for assistance in interpreting those already garnered. But though these international amenities are common enough in the world of science, it is but rarely that the Government of one nation does honour to the distinguished men in another. We therefore notice with keen satisfaction that the French Government has just decorated a number of foreign investigators, in connection with the recent centenary of the Institute. Prof. Max Müller has been appointed Commander of the Legion of Honour, and Lord Rayleigh and Prof. Ramsay have been created Officers. The broad feeling that prompted these awards was the same as that which led the French Government to strike special medals to commemorate the late Dr. Hind's discovery of asteroids, and Janssen and Lockyer's method of observing solar prominences in full sunshine; and, more recently, it inspired the Paris Municipal Council to make arrangements for erecting a statue of Newton in Paris. In sharp contrast to the delicate compliments which the French Government and people pay to British science is the insularity which regulates the distribution of those honours that the British Government have at their disposal. So few and so belated, indeed, are the honours conferred upon men of science in our own country, that it is almost vain to think that her Majesty's advisers will one day have the magnanimity to do honour to investigators of other nations. We cherish the hope that the New Year decorations just given to British men of science by France will induce our own Government to return the courtesy.

M. Bertrand and M. Berthelot, Secrétaires Perpétuels of the Paris Academy of Sciences, have been made Grand Officers of the Legion of Honour. M. Maspero, the distinguished Egyptologist, has been appointed Commander, while Dr. Duclaux, Director of the Pasteur Institute, and MM. Grimaux and Moissan, the eminent chemists, have been created Officers of the same Order. Thus does France honour those who have established their claim "rightly to be great."

Prof. Mark W. Harrington, late Chief of the United States Weather Bureau, and now President of the University of Washington, proposes to establish in the University a department of Terrestrial Physics and Geography, and he would be glad if authors and publishers would send to the University publications relating to these subjects.

A society was legally registered in Paris a few days ago, having for its object the propagation of Pasteur's methods in medical treatment. The Administrative Council consists of MM. Duclaux, J. B. Pasteur, Roux, and Radot. The present capital of the Society is £400, in one hundred shares of £4 each, all of which have been taken up.

While all interested in geology will rejoice at the recognition of the services to science and the State rendered by Sir Joseph Prestwich, they will regret to learn he is still in an extremely weak state of health and confined to his bed. Although he has regained a little strength, his convalescence must of necessity be slow.

Prof. Sollas, F.R.S., will leave in March for Sydney, to take charge of an expedition that is being despatched to make deep borings in a coral atoll. The scheme, which is supported by a strong scientific committee, has been financed by the Royal Society to the extent of £800; and the Government are placing a gunboat at the disposal of the party, to convey them from Sydney to Funifuti, in the Central Pacific, which has been selected as the scene of operations.